

# APPLICATION

## Analysis of Desmopressin from Human Plasma using Strata<sup>®</sup>-X-CW and a Luna<sup>®</sup> Omega Polar C18 Column

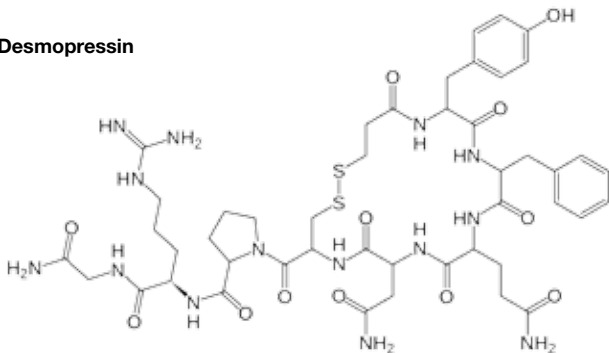


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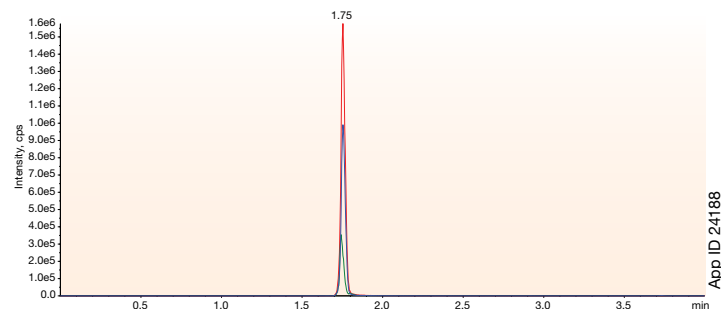
### Overview

Desmopressin, marketed as DDAVP, is a therapeutic peptide that is used for the treatment of diabetes insipidus, bedwetting, hemophilia A and von Willebrand disease. In order to monitor the medication's effectiveness, it is important to be able to detect concentration levels in plasma. A simple and robust method was developed for the identification of desmopressin using Strata-X-CW for solid phase extraction (SPE) and Luna Omega 1.6 μm, Polar C18 for LC/MS/MS analysis. During the sample preparation steps, the polymeric Strata-X-CW tubes provided thorough removal of any contaminants or matrix interferences. For the analysis, the dual polar/non-polar selectivity of the Polar C18 stationary phase provided significant retention of desmopressin, moving it away from ion-suppression regions, while maintaining a rapid analysis time.

### Desmopressin



**Figure 1.**  
1 μg/mL desmopressin and internal standard in mobile phase.



### Sample Preparation

Spike 1 mL of plasma with deuterated internal standard (desmopressin-D5). Dilute plasma 1:1 with water and adjust pH with 50 μL of phosphoric acid.

### SPE Conditions

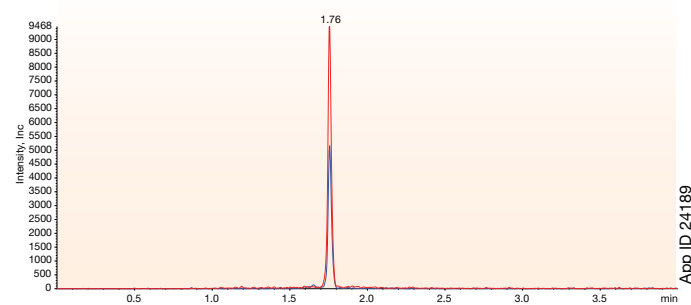
- Tube:** Strata-X-CW 30 mg/3 mL
- Part No.:** 8B-S035-TBJ
- Condition:** 2 mL of Methanol
- Equilibrate:** 2 mL of 100 mM Ammonium Acetate
- Load:** Pre-treated sample
- Wash:** 1. 2% OPA:Methanol (80:20)  
2. 2% NaOH:Methanol (60:40)  
3. Water:Methanol (60:40)
- Dry:** Dry tubes under high vacuum for 5 min
- Elute:** 2 mL of 5% Acetic acid in Methanol

Evaporate sample and reconstitute with 100 μL of 0.1% acetic acid in water. Transfer reconstituted sample to an autosampler vial for LC/MS/MS analysis.

### LC-MS/MS Conditions

- Column:** Luna Omega 1.6 μm Polar C18
- Dimensions:** 30 x 2.1 mm
- Part No.:** 00A-4748-AN
- Mobile Phase:** A: 0.1% Formic Acid in Water  
B: 0.1% Formic Acid in Acetonitrile
- Gradient:** 5 – 70% B in 4 min
- Injection Volume:** 50 μL
- Flow Rate:** 0.5 mL/min
- Temperature:** 40 °C
- Detection:** MS/MS (SCIEX API 4000<sup>™</sup>)
- Analytes:** 1. Desmopressin  
2. Desmopressin-D5

**Figure 2.**  
25 ng/mL plasma extract.



# APPLICATION

## Luna<sup>®</sup> Omega Ordering Information

5 µm Minibore and MidBore™ Columns (mm)								SecurityGuard™ Cartridges (mm)
Phases	30 x 2.1	50 x 2.1	100 x 2.1	150 x 2.1	50 x 3.0	100 x 3.0	150 x 3.0	4 x 2.0*
<b>Polar C18</b>	00A-4754-AN	00B-4754-AN	00D-4754-AN	00F-4754-AN	00B-4754-YO	00D-4754-YO	00F-4754-YO	AJO-7600
								for ID: 2.0 - 3.0 mm

5 µm Analytical Columns (mm)					SecurityGuard Cartridges (mm)
Phases	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0*
<b>Polar C18</b>	00B-4754-E0	00D-4754-E0	00F-4754-E0	00G-4754-E0	AJO-7601
					for ID: 3.2-8.0 mm

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3 µm Minibore Columns (mm)						SecurityGuard Cartridges (mm)
Phases	30 x 2.1	50 x 2.1	100 x 2.1	150 x 2.1	4 x 2.0*	
<b>Polar C18</b>	00A-4760-AN	00B-4760-AN	00D-4760-AN	00F-4760-AN	AJO-7600	
						for ID: 2.0-3.0 mm

3 µm MidBore Columns (mm)					SecurityGuard Cartridges (mm)
Phases	50 x 3.0	100 x 3.0	150 x 3.0	4 x 2.0*	
<b>Polar C18</b>	00B-4760-YO	00D-4760-YO	00F-4760-YO	AJO-7600	
					for ID: 2.0-3.0 mm

3 µm Analytical Columns (mm)						SecurityGuard Cartridges (mm)
Phases	50 x 4.6	100 x 4.6	150 x 4.6	250 x 4.6	4 x 3.0*	
<b>Polar C18</b>	00B-4760-E0	00D-4760-E0	00F-4760-E0	00G-4760-E0	AJO-7601	
						for ID: 3.2-8.0 mm

1.6 µm Microbore Columns (mm)			
Phases	50 x 1.0	100 x 1.0	150 x 1.0
<b>Polar C18</b>	00B-4748-A0	00D-4748-A0	00F-4748-A0

1.6 µm Minibore Columns (mm)					SecurityGuard ULTRA Cartridges <sup>†</sup>
Phases	30 x 2.1	50 x 2.1	100 x 2.1	150 x 2.1	3/pk
<b>Polar C18</b>	00A-4748-AN	00B-4748-AN	00D-4748-AN	00F-4748-AN	AJO-9505
					for ID: 2.1 mm

### Strata<sup>®</sup>-X-CW Ordering Information

Format	Sorbent Mass	Part Number	Unit
<b>Tube</b>	30 mg	8B-S035-TBJ	3 mL (50/box)

<sup>†</sup> SecurityGuard ULTRA Cartridges require holder, Part No.: AJO-9000  
<sup>\*</sup> SecurityGuard Analytical Cartridges require holder, Part No.: KJO-4282



If Luna analytical columns do not provide at least an equivalent separation as compared to a competing column of the same particle size, similar phase and dimensions, return the column with comparative data within 45 days for a FULL REFUND.

#### Terms and Conditions

Subject to Phenomenex Standard Terms and Conditions, which may be viewed at <http://www.phenomenex.com/TermsAndConditions>.

#### Trademarks

MidBore and SecurityGuard are trademarks, Luna and Strata are registered trademarks of Phenomenex. API 4000 is a trademark of AB SCIEX Pte. Ltd. AB SCIEX™ is being used under license.

SecurityGuard is patented by Phenomenex. U.S. Patent No. 6,162,362  
**CAUTION:** this patent only applies to the analytical-sized guard cartridge holder, and does not apply to SemiPrep, PPREP or ULTRA holders, or to any cartridges.

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